

We Claim:

1. A thermal transfer device comprising a thermal source  
maintained in parallel to a thermal sink and having a  
thermally conductive, compressible, multiple turn coil  
5 between them.

2. A thermal transfer device according to claim 1 wherein the  
thermal sink surrounds the thermal source.

3. A thermal transfer device according to claim 1 wherein  
said thermal source is made of a dielectric material.

4. A thermal transfer device according to claim 3 wherein  
said thermal source is made of sapphire.

5. A thermal transfer device according to claim 1 wherein  
said thermal sink is made of a dielectric material.

6. A thermal transfer device according to claim 1 wherein  
said thermally conductive coil is made of copper.

7. A thermal transfer device according to claim 6 wherein  
said copper coil is made from copper wire about 0.011 inch  
thick.

8. A thermal transfer device according to claim 1 wherein the  
thermal source and the thermal sink are concentric.

9. A thermal transfer device according to claim 8 wherein the outer wall of the thermal sink is grooved to accommodate the compressive coil.

10. A thermal transfer device according to claim 2 wherein the thermal sink includes a means of cooling.

11. A thermal transfer device according to claim 1 wherein the conductive, compressible, multiple turn coil fills the gap between the thermal source and the thermal sink.

12. In a vacuum chamber comprising a processing chamber including a substrate to be processed, a processing gas inlet source that traverses a microwave energy source for forming a plasma from the processing gas, the improvement comprising a microwave impervious gas inlet made of a dielectric material in the form of a tube that provides a thermal source, the dielectric tube surrounded by a concentric dielectric tube that provides a thermal sink, and a compressible, conductive multiple turn coil between them.

13. A vacuum chamber according to claim 12 wherein said coil is made of copper.

14. A vacuum chamber according to claim 12 wherein said gas inlet source is made of sapphire.